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# Selected Speeches and News Releases

March 16 - March 23, 1989

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# News Releases

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U.S. Department of Agriculture • Office of Information

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## JAMAICA SELECTED FOR AGRICULTURAL TRADE MISSION

WASHINGTON, March 16—Secretary of Agriculture Clayton Yeutter today announced that a U.S. agricultural trade and development mission will visit Jamaica. Yeutter made the announcement following a meeting today with Jamaican Prime Minister Michael Manley. This will be the fourth agricultural trade and development mission in 1989.

The U.S. target date for the mission is June 1989, but the exact dates must be negotiated with Jamaica. The mission's plan of action will be developed at a country strategy and program development workshop at the U.S. Department of Agriculture this spring. The mission may include another country in the Caribbean or Latin America. That country has not yet been determined and will be announced at a later date.

Yeutter said that in addition to demonstrating support for the Caribbean Basin Initiative, the agricultural trade and development mission would offer an excellent opportunity to review all U.S. trade and development programs in Jamaica and make recommendations for improved coordination.

The mission will include representatives from the U.S. Departments of Agriculture and State and the U.S. Agency for International Development. Three-to-six private-sector representatives, yet to be selected, also will be part of the team. They will be chosen for their knowledge of U.S. export programs, as well as the food needs, trade potential and economics of the recipient countries.

Congress authorized the missions program in December 1987 to encourage greater U.S. private-sector and foreign country participation in U.S. agricultural trade and development activities. To date, five missions have visited nine countries: the Philippines, Indonesia, Hong Kong, Singapore, Mexico, Algeria, Tunisia, Kenya and Cote d'Ivoire.

For more information on the missions program, contact Wayne W. Sharp, U.S. Coordinator, Agricultural Trade and Development Missions Program, Room 3058-South, Foreign Agricultural Service, U.S. Department of Agriculture, Washington, D.C. 20250-1000; telephone (202) 382-0368.

Lynn K. Goldsbrough (202) 447-3448  
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## USDA ANNOUNCES PREVAILING WORLD MARKET PRICE FOR UPLAND COTTON

WASHINGTON, Mar.16—Acting Under Secretary of Agriculture Richard W. Goldberg today announced the prevailing world market price, adjusted to U.S. quality and location (adjusted world price), for Strict Low Middling (SLM) 1-1/16 inch (micronaire 3.5-4.9) upland cotton (base quality) and the coarse count adjustment in effect from 12:01 a.m. Friday, Mar. 17, through midnight Thursday, Mar. 23.

Since the AWP is less than the 1987-crop and 1988-crop base quality loan rates of 52.25 and 51.80 cents per pound, respectively, the loan repayment rate for 1987-crop and 1988-crop upland cotton during this period is equal to the AWP adjusted for the specific quality and location.

Because the loan repayment rate for 1988-crop upland cotton in effect during this period is less than the established loan rate, loan deficiency payments will be made to eligible producers who agree to forgo loan eligibility on their 1988-crop upland cotton. The loan deficiency payment rate for cotton which the producer agrees not to pledge as loan collateral during this period will equal the difference between the loan rate and the loan repayment rate in effect for that period.

The AWP will continue to be used to determine the value of upland cotton that is obtained in exchange for commodity certificates. However, no coarse count adjustment will be applicable during this period because the calculated adjustment is less than zero.

Based on data for the week ending Mar. 16, the AWP for upland cotton and the coarse count adjustment are determined as follows:

### Adjusted World Price

Northern Europe Price .....	65.48
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#### Adjustments:

Average U.S. spot market location .....	12.01
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SLM 1-1/16 inch cotton .....	2.00
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Average U.S. location .....	0.42
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Sum of Adjustments .....	-14.43
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ADJUSTED WORLD PRICE .....	51.05 cents/lb.
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### Coarse Count Adjustment

Northern Europe Price .....	65.48
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Northern Europe Coarse Count Price .....	-61.77
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	3.71
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Adjustment to SLM 1-inch cotton .....	-4.15
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COARSE COUNT ADJUSTMENT .....	0 cents/lb.
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The next AWP and coarse count adjustment announcement will be made on Mar. 23.

Charles Cunningham (202) 447-7954

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## DIET OVERCOMES MALARIA IN ANIMAL TESTS, EVEN WHEN DRUGS DON'T

WASHINGTON, March 20—Far from being subdued, malaria is back with a vengeance.

The latest estimates published in the February issue of *Parasitology Today* are that nearly 500 million people living in Africa, Latin America, Asia and the Pacific are infected with the malarial parasite.

But U.S. Department of Agriculture and University of Miami researchers today reported that a change in diet to one high in unsaturated fat prevented even the most drug-resistant malaria parasites from taking hold in mice.

If people respond in a similar fashion, the dietary approach holds promise for the prevention and treatment of this recalcitrant disease, the researchers said. “With two and a half million malaria deaths a year and the rapid spread of a drug-resistant form of the disease, we are excited about our results,” said Orville A. Levander, a chemist with USDA’s Agricultural Research Service, Beltsville, Md.

Levander oversees preparation of the special diets—which contain a generous helping of fish oils and no vitamin E to prevent their breakdown. The two factors work together to make the parasite self-destruct, he believes.

Microbiologist Arba L. Ager, Jr., and colleagues at the University of Miami’s Center for Tropical Parasitic Diseases begin feeding the diet to mice one to four weeks before injecting them with the parasite—a singlecelled protozoan—and continue the diet until the parasites are gone. “The parasites multiply for a while,” said Ager. “But by three or four weeks, the animals are free of them.”

He hopes the diet treatment can be shortened to a more practical one to two weeks for human use—both for prevention and cure. Otherwise, it may have to be combined with a drug, he said.

In Africa, where malaria is most entrenched, it claims the lives of one quarter of the children under the age of four, the researchers said at the

national meeting of the Federation of American Societies for Experimental Biology in New Orleans. And the disease is out of control for several reasons:

The most pathogenic of the malarial organisms—*Plasmodium falciparum*—is increasingly resistant to the least toxic and most widely used antimalarial drug, chloroquine. Also, the mosquitoes that transmit the disease are becoming resistant to available insecticides, and the cost of spraying is often too high in money or manpower or both.

Levander and Ager rekindled a dietary treatment reported 30 years ago to cure malaria in mice. The idea is to change the fatty acid composition of the membranes of both the parasite and the host's red blood cells, which harbor the parasite, making both more vulnerable to oxidation.

Highly unsaturated fatty acids—like those found in fish oils—rapidly self destruct without vitamin E or other antioxidants around to protect them, explained Levander, who is with the Beltsville Human Nutrition Research Center. “The parasite is unable to make its own fatty acids and uses whatever is around,” he said. “It's also missing two other antioxidant defense systems found in higher animals.”

In theory, he said, “if you limit vitamin E, you've gotten rid of three defenses against oxidation. The result is almost like spontaneous combustion. “And fish oil is not an innocuous substance; it can accelerate vitamin E deficiency.”

The team has so far tested four fish oils—cod liver, anchovy, salmon and menhaden (from the Atlantic herring)—and “all work pretty well,” said Levander.

Linseed oil, also studied, was somewhat less effective than the fish oils; linseed oil has about 60 percent highly unsaturated fat. Rapeseed oil, with about 10 percent highly unsaturated fat, was ineffective in tests.

If the dietary approach also works in people, U.S. troops may be the first to benefit. Ager's research is funded by the Army's Medical Research and Development Command.

Judy McBride (301) 344-4095

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## MYERS ANNOUNCES INITIATIVES FOR BIOLOGICAL CONTROL

WASHINGTON, March 22—Deputy Secretary of Agriculture Peter C. Myers today opened an exhibit observing 100 years of biological control of agricultural pests and announced new initiatives for expanding this safe and cost effective method of pest control.

Biological control uses natural organisms instead of chemicals to keep agricultural pests in check. The resulting balance between a target pest and its natural enemies brings its numbers down to an economically acceptable level.

One hundred years ago, the U.S. Department of Agriculture introduced the Vedalia beetle to California from Australia, thereby rescuing the state's fledgling citrus industry from destruction by the cottony cushion scale, a major citrus pest. Besides the Vedalia beetle, the exhibit features eight other biological control agents, such as the parasitic wasp from Colombia that attacks the Colorado potato beetle and an Asian fish that eats hydrilla, an aquatic weed.

In addition to marking the centennial, Myers announced several USDA biological control initiatives:

- Successful conclusion of the alfalfa weevil project, which has spread beneficial insects to within reach of virtually every alfalfa field in the country.

- Final negotiations between USDA and the Soviet Union for the first exchange of scientists in biocontrol research. A major project will be the USSR exploration for natural enemies of the Russian wheat aphid.

- The departure for China this spring of the first USDA scientist under a five-year agreement signed last November. He will search for fungi that attack leafy spurge. Two other scientists will go to China later.

- Development by a USDA scientists of a virus that is a new potential weapon against gypsy moths, a caterpillar that eats the foliage of more than 500 tree species.

- Plans for a Biological Control Service Institute conceived as a clearinghouse for national and international biological control programs. "I am sure USDA will do all it can to encourage biological control of pests in the future," Myers said. "I commend the Animal and Plant Health Inspection Service and the Agricultural Research Service on their cooperation to integrate their activities so that promising natural agents can be fielded quickly. This time-honored approach meets the present-day

demand for agricultural practices that require low inputs, can be sustained over time, and are gentle on the environment.”

Max Heppner (301) 436-7799

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## TINY WASPS FIGHT THE ALFALFA WEEVIL

WASHINGTON—Millions of tiny parasitic wasps that fight the destructive alfalfa weevil are now within reach of virtually every alfalfa field in the country.

This nationwide distribution of the beneficial insects completes a 30-year effort by the U.S. Department of Agriculture to control the pest biologically, according to Gary Cunningham, chief of biological control operations in USDA’s Animal and Plant Health Inspection Service. “This project is the largest biological control effort ever conducted in the United States,” says Cunningham. “It outstrips previous efforts in the number of farmers affected, the number of acres covered, and the number and species of beneficial insects released to control a single pest.

“In the past, farmers have spent up to a billion dollars per year to control the alfalfa weevil with chemical pesticides. By coupling biological control with compatible management practices, alfalfa growers may need to apply chemicals only one out of six years, instead of every year, to avoid economic losses. This lowers control costs dramatically and greatly reduces environmental stress.”

The idea of controlling the alfalfa weevil with natural enemies was first developed by scientists of USDA’s Agricultural Research Service, Cunningham says. In the mid-1950’s, ARS researchers identified several species of wasps in Europe and Asia that attack only alfalfa weevils and are harmless to humans and animals. Female wasps deposit their eggs inside the bodies of weevil adults and larvae. After wasp larvae hatch, they literally eat the host insect alive.

“ARS first put the parasitic wasps to work in 11 northeastern and mid-Atlantic states,” says Cunningham. “By 1980, spraying of chemical insecticides to control the weevil had dropped 73 percent. Some states reported that the wasps alone provided virtually 100 percent protection from the insect pest. Alfalfa producers in the 11 states saved an average of \$8 million a year, while ARS spent only \$1 million on the entire project.”



In 1980, APHIS took over the task of spreading the wasps, selecting an operating area covering 26 states further south and west. Farmers volunteered use of their alfalfa fields for release of the wasps. Employees of the Cooperative Extension Service, state departments of agriculture, and university researchers cooperated in distributing the beneficial insects. Altogether, about 16 million parasitic wasps were released at thousands of locations.

An ongoing, long-term evaluation of that stage of the project shows that farmers quickly reduced the amount of chemicals sprayed against alfalfa weevils. There was an annual three percent reduction in the number of fields sprayed, totaling 21 percent for the seven years covered by the study. Several states reported a doubling of the number of parasites attacking the weevil. Cunningham believes that their numbers will keep increasing rapidly as they encounter less interference from chemical sprays.

The project was extended to 12 western states in 1986, but the work was more complicated. Western fields were thought to be infested mainly with a distinct western strain of the weevil. Since wasps were being distributed by releasing parasitized weevils from the East, concern was raised about complicating the western weevil infestation. To relieve this concern, APHIS specialists developed a method to mass rear wasps to the adult stage for distribution separate from the host weevil.

Release of the wasps in the last of the western states was completed last year, with good initial signs of success, Cunningham says. Fields in the West will continue to be monitored for at least two years to be sure the wasps continue to flourish.

Dollar values for the savings are not yet available. Cunningham estimates, however, that the project already has returned more than the total amount spent by APHIS since 1980—about \$10 million for all activities associated with biological control of alfalfa weevil. No further inputs will be needed to keep the benefits coming year after year.

Max Heppner (301) 436-7799

Issued: March 22, 1989

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## **FmHA PROCESSES 23,000 APPLICATIONS FOR DEBT RELIEF**

WASHINGTON, March 21—More than 23,000 requests by farmers for special debt-relief consideration have been processed by the U.S. Department of Agriculture's Farmers Home Administration, according to latest survey results. "Every completed application will be processed in time for farmers to put their spring crop in the ground," said Neal Sox Johnson, acting FmHA administrator. He said that even those whose applications are incomplete will be able to farm this year because of expanded appeal rights.

For borrowers more than 180 days delinquent in servicing their debt, the Agricultural Credit Act of 1987 required FmHA to advise them of various liberalized debt service options available under the act. FmHA received more than 28,000 completed applications out of over 66,000 notices sent last November notifying delinquent borrowers of their options.

By law, borrowers had 45 days to respond and furnish certain financial and production data. FmHA then had 60 days in which to obtain needed information and process the applications. In most cases, that period ended March 10. Of the more than 28,000 applications received, over 14,000, or half the total, were accepted under FmHA's "rule of reason" policy which provided borrowers with incomplete submissions additional time to finish their applications, Johnson said. "The applications that have not yet been fully processed by FmHA are by and large 'rule of reason' applications filed too late to be completed within the 60-day period," Johnson said. "Some of these came in on the 58th or 59th day," he added, noting that FmHA field staff will continue working overtime and weekends to complete processing of this group of around 5,000 applications. "Employees in our 1,900 county offices have demonstrated extraordinary dedication by putting in nearly 150,000 hours of overtime just to get this job done," Johnson said. "We shipped caseloads of loan documents cross country when necessary to properly match computer and human resource capacities. We moved 'jump teams' into the heaviest workload states, and moved county office personnel to where they were needed most," he added.

In addition to this process, FmHA field employees must service more than 245,000 other borrowers. "The winter months are traditionally our busiest time, so our special effort in this instance was a massive undertaking," Johnson said.



About \$8.8 billion in overdue loans is owed by this category of borrowers. “For the most part, this is extremely old debt. More than half of these loans have been delinquent for more than four years, and more than 80 percent have been delinquent for more than three years,” he said.

FmHA, the federal government’s “lender of last resort,” makes subsidized loans to farmers unable to obtain commercial credit at reasonable rates and terms. Most of these loans carry interest rates which have ranged from 3 to 6 percent, with some as low as 1 percent.

FmHA loan assistance to delinquent borrowers includes loan reamortization or rescheduling, payment deferral, debt forgiveness for borrowers placing highly erodible crop land into the conservation reserve, and reduced interest rates. If none of these efforts produce a “feasible plan,” FmHA may write down the debt, provided that the government will get back at least as much in future loan payments as it would through foreclosure. Borrowers who don’t qualify for one of these programs may “buy out” at net recovery value, or the amount it would cost the government to foreclose.

More detailed survey results will be available in about 45 days, since borrowers now have that period of time to decide whether or not to accept FmHA’s restructuring offer, Johnson said.

The purpose of the loan restructuring provisions is to assist farmers coping with financial difficulties encountered through no fault of their own, and keep them on the farm. “We are dedicated to achieving that objective in as many cases as we possibly can,” Johnson concluded.

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## **IMPLEMENTATION OF AGRICULTURAL CREDIT ACT OF 1987**

### **Background**

- The Agricultural Credit Act of 1987, signed into law Jan. 6, 1988, required the Farmers Home Administration to send notices to all farmer program borrowers who were at least 180 days delinquent in repayment, advising them of special debt relief options. In late November 1988, over 66,000 borrowers were mailed notices by certified mail.

- The law covers FmHA farmer program loans such as operating (OL), farm ownership (FO), emergency disaster (EM), soil and water (SW) and economic emergency (EE) loans.

## Requirements Under the Law

- Under the law, delinquent borrowers had 45 days to respond to the notices and provide certain financial and production data. Because the 45-day period occurred during the holiday season, FmHA adopted a “rule of reason” policy under which applications that didn’t include all supporting documentation were nevertheless accepted from borrowers who had made a good faith effort to complete their applications.
- FmHA then had 60 days to review the applications to determine the preferred debt relief option for the farmer. FmHA used a computer program which considered combinations of servicing options to produce a “feasible plan,” under which the borrower could make his loan payments and continue to qualify for FmHA loan assistance.
- Debt relief options include: rescheduling or reamortizing, loan consolidation, deferral of payments, debt forgiveness when a borrower places highly erodible land into the conservation reserve, reduced interest rates, debt write down, etc.
- Debt write down is used as a last resort option and is selected only if: (1) no other combination will produce a “feasible plan;” and (2) if future loan payments will equal or exceed proceeds that the government would have received through foreclosure.
- If a “feasible plan” is not possible, borrowers are given the opportunity to meet with other creditors in an effort to achieve an agreement that would permit a feasible credit plan. If no other source of outside credit can be obtained, the borrower is then given the opportunity to “buy out” at net recovery value, which is the cost to the government to foreclose on the property. If the borrower is unable to buy out at net recovery value, FmHA will begin liquidation.
- In all cases, borrowers have extensive appeal and loan preservation rights. Loan preservation rights consist of leaseback and buyback options as well as the choice to buy or lease the house and buildings on the property, even after FmHA takes the property back.

## Survey Results

- As of March 10, which in most cases was the end of FmHA's 60-day response period, 28,493 completed applications had been received, and 23,284 had then been processed by FmHA.
- The 5,209 completed applications which were not processed as of March 10 are primarily "rule of reason" applications, filed too late to be processed within the 60-day time period. (Some of those applications were filed on the 58th or 59th day in the 60-day period.) The remaining applications will be processed promptly.

## Next Step for Borrowers

- Borrowers whose applications have been processed now have 45 days to accept, reject, or ask for modifications of FmHA's response.
- Borrowers who responded but failed to complete their applications have full appeal rights, expanded under this law, as well as preservation loan rights which include leaseback, buyback and homestead purchase options.
- Borrowers who failed to respond have preservation loan rights only.
- Every borrower who received a notice, regardless of whether or not he or she submitted a completed application or even responded, will have an opportunity to farm this year. By exercising the extensive appeal rights and other options, every borrower who wants to farm this year will have an opportunity to do so.

## Definition of Delinquent Loans

- FmHA, the federal government's "lender of last resort," makes subsidized loans to farmers unable to obtain commercial credit at reasonable rates and terms. Most of the delinquent loans in this category have interest rates which range from 3-to-6 percent with some as low as 1 percent.
- Borrowers in this category owe the federal government \$8.8 billion in overdue loans. About half of these borrowers haven't made a payment in more than 4 years; and 80 percent haven't made a payment in more than 3 years. One reason for the age of the delinquent loans is that FmHA has not been allowed to accelerate any farm loans since 1983 due to court rulings. This injunction was recently lifted.

Ron Ence (202) 447-6903

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## FmHA RESPONSE TO AG CREDIT ACT: "WE CAN HELP IF WE CAN TALK"

WASHINGTON—The workload for the winter months is heavy under normal conditions in the 1,900 Farmers Home Administration county offices nationwide. "Normal" involves providing service to FmHA's 245,000 regular borrowers at this—the agency's busiest—time of the year, according to Neal Sox Johnson, acting FmHA administrator.

The Agricultural Credit Act of 1987 changed all that. FmHA's busy season took on new meaning as the most massive undertaking in the agency's history got underway last fall.

Complying with the act, FmHA notices in November told more than 66,000 seriously delinquent borrowers about liberalized options available under the new legislation. Borrowers had 45 days to respond; FmHA had 60 days thereafter to process the applications—calendar days, not work days.

For FmHA staff around the country, this unprecedented effort has resulted in processing more than 23,000 requests by farmers for the special debt-relief consideration, said Johnson. From the 66,000 notices sent, 28,000 applications were received; of these, more than 14,000 were accepted under FmHA's "rule of reason" policy which provided additional time for certain borrowers to complete their applications.

Johnson said the remaining 5,000 unprocessed applications generally are "rule of reason" cases also, filed too late to be completed within the 60-day period. Some arrived on the 58th or 59th day, he noted, and FmHA staff will continue to work overtime to complete processing of this final group.

Response by FmHA staff has been "phenomenal," Johnson said. "Caseloads of loan documents were shipped cross country. 'Jump teams' were brought into the states with the heaviest workloads, and county personnel were moved where they were most needed."

What was it like in the county offices as they dealt with 66,000 borrowers who had about \$8.8 billion in overdue loans, mostly very old debt? Johnson noted about 50 percent of the delinquent debt is more than four years old, more than 80 percent is three years old.

For Alphonso Andrews, FmHA county supervisor in Waynesboro, Ga., it meant having the only federal office open on the President's Day holiday February. A Massachusetts FmHA employee, Christopher Higgins, was on loan to Waynesboro from Feb. 13-24, and Andrews said



they worked nonstop to take advantage of the extra help—nights, weekends, and holidays.

Not everyone could stay late at the office; work went home in those cases. Kathy Ross, FmHA county supervisor in Sandersville, Ga., has a seven-month-old baby to pick up from the sitter every afternoon. Since she was unable to work late at the office, she took paperwork home every night to keep the applications moving. During the day, she covered the red-clay countryside, filled with strip mines and small grain, beef and dairy farms, visiting borrowers to get more information for forms and appraisals.

Dave Altenbernd, FmHA county supervisor in Thief River Falls, Minn., spends two days a week in a small field office in Grygla, 40 miles away. His office's notices to 235 borrowers merited a 60-percent response. Processing is almost 100-percent complete, thanks to his staff of eight and two other FmHA employees brought in from other parts of the state.

Many delinquent borrowers who received notices had already made their decisions. Jim Evans, FmHA county supervisor in Statesboro, Ga., reports, "Forty already had liquidated voluntarily; of the other 36 notified, responses came from 27 who we're working with now."

Much staff time was spent helping farmers with the forms. In Waynesboro, only two of the forms supervisor Andrews received were complete. "Working with farmers to complete the forms took almost as much time as processing," Andrews said. In Enid, Okla., FmHA county supervisor James McDonald reports that classes at the local vocational-technical school on how to fill out the forms made the FmHA workload much easier.

Acting administrator Johnson reports nearly 150,000 hours of overtime were clocked nationwide by the end of February in meeting the legislative deadline; the figure is expected to reach 400,000. But a common thread runs through conversations with county personnel nationwide that surpasses overtime and exceptional workloads.

Evans of Statesboro, Ga., said, "I like people; I don't know any county supervisor who doesn't. I try to treat them like I'd want to be treated. Some days I feel good—I go home saying, 'we helped save old John's operation today.' Other days, I've had to tell Harry we can't carry him anymore, but we're offering him a chance to buy out at net liquidation value—which is one heck of a deal." "We want to save everybody who can be saved, and make the best of a bad situation for

those who can't," Evans said. From his Enid office, McDonald echoes this thought. "If a family will come in and talk to us, a lot of times we can work something out. There are a lot of ways we can help, as long as we can talk," he said.

Ron Ence (202) 447-6903

Issued March 21, 1989

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## **USDA ANNOUNCES PREVAILING WORLD MARKET RICE PRICES**

WASHINGTON, March 21—Acting Under Secretary of Agriculture Richard W. Goldberg today announced the prevailing world market prices of milled rice, loan rate basis, as follows:

- long grain whole kernels, 10.33 cents per pound;
- medium grain whole kernels, 9.69 cents per pound;
- short grain whole kernels, 9.62 cents per pound;
- broken kernels, 5.17 cents per pound.

Minimum loan repayment rates for 1987 crop loans are the higher of the world price or 50 percent of the loan rate. For 1988 crop rice, the minimum repayment rates are the higher of the world price or 60 percent of the loan rate.

Based upon these prevailing world market prices for milled rice, rough rice world prices are estimated to be:

- long grain, \$6.39 per hundredweight;
- medium grain, \$6.06 per hundredweight;
- short grain, \$5.78 per hundredweight.

The prices announced are effective today at 3:00 P.M. EST. The next scheduled price announcement will be made March 28 at 3:00 P.M. EST, although prices may be announced sooner if warranted.

Gene Rosera (202) 447-5954

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## **BORON: A NEW ESSENTIAL ELEMENT?**

WASHINGTON, March 23—New evidence that boron—an element known to be essential for healthy crops—could also be essential for the optimal health of people was reported this week by U.S. Department of Agriculture researchers.

Psychologist James G. Penland said today that he found “striking and very systematic differences” in the brain wave patterns of 15 older men and women between periods of low and adequate boron intake.

The differences “suggest that the volunteers were less alert when their boron intake was low,” he said. Brain activity was “more coherent” or “less coherent” in different areas of the brain, “which can be interpreted as good or bad depending on the task at hand,” he added. “This is the first study to show that boron depletion alters the function of an organ system,” said Penland of USDA’s Agricultural Research Service in Grand Forks, N.D. He and colleague Forrest H. Nielsen reported on the study at the annual meeting this week of the Federation of American Societies for Experimental Biology in New Orleans.

During the four-month study, Penland measured the volunteers’ brain activity with an electroencephalograph on three separate occasions while they consumed only 0.23 milligrams of boron each day and three more times after they took daily 3-mg supplements. That’s about what a person would get from a well balanced diet containing fresh fruits and vegetables, such as apples, pears, grapes, nuts and leafy vegetables.

Forrest H. Nielsen, director of Grand Forks Human Nutrition Research Center, earlier reported that the volunteers had less available copper and calcium while on the low-boron diet.

The potential for boron’s debut as an essential element will be discussed in the April issue of Agricultural Research magazine.

A major criterion in establishing a nutrient as essential to human health is that its deficiency impairs a biological function of the body, the researchers said.

Copper, a known essential element, “is thought to be important in preventing heart disease as well as bone and joint disorders,” Nielsen explained. But blood levels of copper dropped during the low-boron period as did levels of two copper-containing enzymes—both sensitive indicators of a person’s copper status.

Nielsen said he doesn't know how boron is affecting copper at the biochemical level, but added "any decline in a person's copper status is probably undesirable."

Nielsen first reported two years ago that eating a boron-rich diet may help prevent osteoporosis in postmenopausal women.

This study, like the first one, indicates that an adequate boron intake prevents the loss of calcium—important for maintaining healthy bones and preventing osteoporosis, he said.

Boron depletion raised levels of a hormone that increases the loss of calcium in the urine.

Other positive indicators seen in the first study—such as increases in circulating estrogen, and decreases in the loss of calcium and magnesium—were not consistently seen in this study. Nielsen said the fact that the two studies differed in design could explain the inconsistencies in the results.

In both animal and human studies, Nielsen said, boron's effects on physiological processes have been hard to pin down. They seem to hinge on intake levels of other nutrients—six that he has identified so far.

The researchers are analyzing the results of a third human study that was six months long and done under more controlled conditions.

Judy McBride (301) 344-4095

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## **USDA-342-89 BREAST-FED INFANTS "IDLE" ON LESS FUEL**

WASHINGTON, March 23—Breast-fed infants are more fuel efficient than formula-fed infants—burning significantly fewer calories when they sleep, a U.S. Department of Agriculture researcher reported today.

In a study of 40 healthy infants, "the 20 who were breast fed expended 5 percent less energy per day than the formula-fed infants at one month of age and about 12 percent less by four months," said nutritionist Nancy F. Butte with USDA's Children's Nutrition Research Center, Houston, Texas.

The difference was in their sleeping, or basal metabolic rates, and not in their activity levels, she said at the annual meeting of the Federation of American Societies for Experimental Biology in New Orleans.



Breast-fed infants need fewer calories to “idle,” she explained, just as some automobiles use less gas when standing in neutral.

Based on the findings, Butte holds that “mother’s milk provides adequate energy for the first four months. After that infants may need to be supplemented, depending on the mother’s milk volume and the infant’s needs.”

She said results of the 24-hour measurements of energy expenditure she made with colleague William Wong “partially explain why breast-fed infants get by on about 20 percent fewer calories than formula-fed infants by the fourth month.”

And because they consume fewer calories, breast-fed infants grew more slowly, she said. Formula-fed infants burn some of their excess calories and funnel the rest into growth.

As seen in earlier studies at the Houston center and elsewhere, the disparity in growth rate and calorie intake was greater at four months than at one month. The center is funded by USDA’s Agricultural Research Service and staffed by Baylor College of Medicine and Texas Children’s Hospital.

The studies are part of the center’s ongoing research aimed at defining the energy requirements of rapidly growing infants.

The subject is a controversial one, Butte said, posing some still unanswered questions. For example, are the intakes of breast-fed infants less than what is needed for optimal growth and development as the Recommended Dietary Allowances suggest? Or, are we overfeeding the formula-fed babies?

For example, she said, the volume of milk consumed by breast-fed infants plateaus at about 750 milliliters after the first month, whereas formula-fed infants keep increasing their intake to about 930 ml during the four months. The current RDA was derived from calorie intakes of predominantly formula-fed infants.

Despite their higher calorie intakes, “formula-fed infants were not any fatter than their breast-fed counterparts,” said Wong, a chemist. He found no significant difference in body composition between the groups.

The Houston researchers used harmless, nonradioactive isotopes to measure the infants’ energy expenditure over a 24-hour period as well as their body composition. The center is a world leader in the application of stable isotopes to nutrition research.

They fed the infants a few drops of water labelled with stable isotopes of both oxygen and hydrogen. Then they analyzed breath, urine and saliva samples to see how quickly the isotopes appeared and to measure their disappearance rate.

Judy McBride (301) 344-4095

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